Antrolith in the maxillary sinus: an unusual complication of endoscopic sinus surgery

Satish Nair · Emmanuel James · Angshuman Dutta · Sunil Goyal

Abstract Antrolith of the paranasal sinuses are rare entity which are usually asymptomatic, caused by calcification of a nidus and are detected incidentally on radiological examinations. We report a case which presented to us with features of pansinusitis six months after endoscopic sinus surgery. Radiological examination revealed a discrete bony density in the maxillary sinus blocking the ostiomeatal complex. The bony mass was removed endoscopically from the maxillary sinus with drainage of discharge and debris from the sinuses. Histopathological examination revealed an antrolith with bony nidus and calcium deposited around it. We present the imaging and review the present world literature on this rare complication of endoscopic sinus surgery.

Keywords Antrolith · Endoscopic sinus surgery

Introduction

Antrolith of the paranasal sinuses (PNSs) are uncommon findings on CT scan [1]. We present an unusual case of antrolith in the maxillary sinus after endoscopic sinus surgery (ESS) which presented to us as a case of pansinusitis.

Case report

A 35-year-old lady presented with history of nasal discharge, facial pain and headache on the right side of 1 month duration. She also gave history of undergoing ESS 6 months back for bilateral sinonasal polyposis. There was no history of epistaxis, trauma, dental extraction or visual disturbance.

On rhinological examination the patient had central septum with mucopurulent discharge from right nasal cavity and paranasal tenderness of maxillary and frontal sinus. Nasal endoscopy revealed postoperative status on left side with wide maxillary sinus opening and no evidence of discharge or polyps. The right nasal cavity showed discharge and pus in the middle meatus with edema and congestion of the middle turbinate. There was no evidence of mass or polyp.

On radiological examination the X-ray PNS (Waters view) showed haziness of right maxillary and frontal sinus. Non-contrast computerized tomography (NCCT) PNS revealed soft tissue density in the right sided maxillary, frontal and anterior ethmoid sinus (Fig. 1). There was also presence of a bony density in the right maxillary sinus which was seen obstructing the ostiomeatal complex (Fig. 2). Left side showed postoperative status.

The provisional diagnosis was of right sided pansinusitis with a radiodensity in maxillary sinus (? antrolith, ? foreign body). The patient was managed with parenteral antibiotics and planned for ESS. During surgery the middle meatus antrostomy was widened revealing bony mass in the

S. Nair · E. James · A. Dutta · S. Goyal
Command Hospital Air Force,
Bangalore – 560 007, India

S. Nair (✉)
E-mail: aachku@yahoo.com

Fig. 1 NCCT PNS showing right sided pansinusitis with bony radiodensity in the maxillary sinus

Fig. 2 NCCT PNS showing bony radiodensity in maxillary sinus obstructing the ostiomeatal complex

ostiomeatal complex region blocking drainage. The bony mass was removed endoscopically from the maxillary sinus with drainage of discharge and debris from the sinuses. The bony fragment measured 1.0×0.3 cm with fibrotic tissue around it (Fig. 3). Histopathological examination revealed an antrolith with bony nidus and calcium deposited around it. The patient improved after surgery and is asymptomatic after 1 year.

Fig. 3 Specimen of antrolith

Discussion

Antrolith are rare calcified mass in the maxillary sinus which are produced by calcification of a nidus which may be an endogenous materials such as inflamed mucus, pus or clots or exogenous like tooth roots and bone chip or foreign bodies such as dental materials, vegetable matter, paper or glass [1]. Most of the antroliths are asymptomatic and are detected incidentally on radiological examinations. However, on rare occasions they may cause sinusitis if they are located at critical areas causing blockage of drainage of sinus. In case of symptoms they present with foul smelling nasal discharge, occasional epistaxis, facial pain, headache and nasal blockage. Radiological examination of the sinus by standard Waters and panoramic radiograph as well as CT scan helps in identifying the type of pathology and is usually diagnostic [1].

On CT scan PNS antrolith is usually seen as a radiodensity. Besides antrolith radiodensities on CT scan is a common finding seen in variety of conditions like *Aspergillus* sinusitis, non-fungal sinusitis, foreign body sinus, benign and malignant pathology [2].

Aspergillus sinusitis is the commonest cause of intrasinous densities and is seen in 69–77% of patients [3]. They present as fine punctate lesions in the central part of the sinus due to metabolic deposits of calcium in mycelia mass. Radiodensities of non-fungal sinusitis are usually rare, peripheral within the thickened fibrotic submucosal layer of sinus and present as smooth-margined, round or egg shell type [4]. Some of the unusual foreign bodies in the sinus mentioned in the literature presenting as radiodensities are bullets, glass, stones, wood, grasses, match sticks and sand [5, 6]. These patients usually present early with symptoms and need surgical removal to prevent complications.

In addition to the above, various benign and malignant conditions like osteomas, inverted papillomas, osteosarcomas, osteoblastomas, etc. can present as radiodensities within a mass in the sinus. As per literature a solitary discrete density in the sinus is usually a calcification in an inflammatory mass but presence of multiple densities can be an inflammatory lesion or tumor [2].

Normally the mucus in the sinus plays a protective part preventing calcium salts from aggregating but in the presence of inflammation the ciliary clearance is affected causing stasis of secretion allowing calcium salts to be deposited around a nucleus. Surgical removal by ESS or Caldwell Luc is the treatment of choice [7].

Our case presented with features of pansinusitis and a discrete maxillary sinus bony density after ESS. On revision ESS a bony tissue was removed which was found to be histologically an antrolith. As per the study of Richtsmeier et al. on failures of ESS the cause of bony fragment falling into maxillary sinus is due to the improper use of backbiting forceps during uncinectomy [8]. If the forceps after first bite

of uncinate process is not removed and cleaned and a second bite is attempted there is a high probability of the broken uncinate to fall in the sinus. This piece of uncinate process would most probably be the nidus for the antrolith in our case and due its location near the ostiomeatal complex led to blockage of the drainage leading to pansinusitis.

The case is presented here to describe an uncommon complication of ESS which is the result of incorrect or faulty techniques of handling instruments during surgery. A careful examination of the maxillary sinus intraoperatively before packing and good postoperative care can help in preventing such complications.

References

1. Haraji A, Mohtasham N, Zareh MR, Pezeshkirad H (2006) Antrolith in the maxillary sinus: report of a case. *J Dentistry* 3(2):104–106
2. Som PM, Lidov M (1984) The significance of sinonasal radiodensities: ossification, calcification, or residual bone? *AJNR Am J Neuroradiol* 15:917–922
3. Chang T, Teng MMH, Wang SF, Li WY, Cheng CC, Lirng JF (1992) Aspergillosis of the paranasal sinuses. *Neuroradiology* 34:520–523
4. Yoon JH, Na DG, Byun HS, Koh YH, Chung SK, Dong HJ (1999) Calcification in chronic maxillary sinusitis: comparison of CT findings with histopathologic results. *AJNR Am J Neuroradiol* 20(4):571–574
5. Tada E, Sato S, Hattori M, Ogawa K, Ootani I (1967) A foreign body of the maxillary sinus with facial fistula. *J Otolaryngol Jpn* 39:35–39
6. Rahman A (1982) Foreign bodies in the maxillary antrum. *Br Dent J* 153:308
7. Cohen MA, Packota GV, Hall MJ, Steinberg J (1991) Large asymptomatic antrolith of the maxillary sinus. Report of a case. *Oral Surg Oral Med Oral Pathol* 71(2):155–157
8. Richtsmeier, William J (2001) Top 10 reasons for endoscopic maxillary sinus surgery failure. *Triolog Soc Papers* 111(11):1952–1956